



STIC Search Report

EIC 1700

STIC Database Tracking Number: 149045

**TO: Duc Truong
Location: 10D71
Art Unit : 1711
April 12, 2005**

Case Serial Number: 10/734194

**From: Kathleen Fuller
Location: EIC 1700
REMSEN 4B28
Phone: 571/272-2505
Kathleen.Fuller@uspto.gov**

Search Notes



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

➤ I am an examiner in Workgroup: Example: 1713

➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28



Access DB# 149045**SEARCH REQUEST FORM**

Scientific and Technical Information Center

Requester's Full Name: TRONZ, DVC Examiner #: 69332 Date: 3/25/05
Art Unit: 1711 Phone Number 30 2-687 Serial Number: 6734, 174
Mail Box and Bldg/Room Location: 6271 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Formula (1) of claim 1. Charles

SCIENTIFIC REFERENCE BR
Sci & Tech Inf. Cntr

MAR 28 RECD

Pat. & T.M. Office

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>K. Fuller</u>	NA Sequence (#) _____	STN <u>✓</u>
Searcher Phone #: _____	AA Sequence (#) _____	Dialog _____
Searcher Location: _____	Structure (#) <u>1</u>	Questel/Orbit _____
Date Searcher Picked Up: _____	Bibliographic _____	Dr.Link _____
Date Completed: <u>4/12/05</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>20</u>	Fulltext _____	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>27</u>	Other _____	Other (specify) _____

=> file reg

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STRUCTURE FILE UPDATES: 11 APR 2005 HIGHEST RN 848290-51-7
DICTIONARY FILE UPDATES: 11 APR 2005 HIGHEST RN 848290-51-7

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 18, 2005

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

*
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added, *
* effective March 20, 2005. A new display format, IDERL, is now *
* available and contains the CA role and document type information. *
*

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
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<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> file hcaplu

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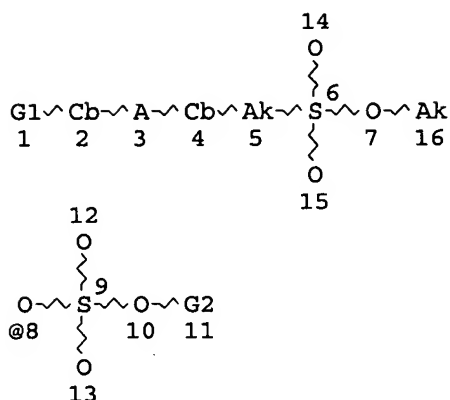
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FILE COVERS 1907 - 12 Apr 2005 VOL 142 ISS 16
FILE LAST UPDATED: 11 Apr 2005 (20050411/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d que

L55 STR



2 structures from this query

VAR G1=CL/BR/I/8
VAR G2=CH3/CF3
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
GGCAT IS UNS AT 2
GGCAT IS UNS AT 4
DEFAULT ECLEVEL IS LIMITED
ECOUNT IS M4 C AT 16

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 16

STEREO ATTRIBUTES: NONE
L57 2 SEA FILE=REGISTRY SSS FUL L55
L58 1 SEA FILE=HCAPLUS ABB=ON L57

only 1 CA reference
The applicant

=> d 158 all hitstr

L58 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2004:510188 HCAPLUS
DN 141:54792
ED Entered STN: 24 Jun 2004
TI Aromatic sulfonate derivative, polyarylene, sulfonated polyarylene and production method thereof, macromolecular solid electrolyte, and proton conductive membrane
IN Kanaoka, Nagayuki; Iguchi, Masaru; Mitsuta, Naoki; Soma, Hiroshi; Ohtsuki, Toshihiro
PA JSR Corporation, Japan; Honda Motor Co., Ltd.
SO Eur. Pat. Appl., 19 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM C07C309-67
ICS C08G061-10; C08G061-12; H01M010-40
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 52
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1431281	A1	20040623	EP 2003-28999	20031217
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				

	IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK	
JP 2004196947	A2	20040715 JP 2002-367042 20021218
US 2004126639	A1	20040701 <u>US 2003-734194</u> 20031215
PRAI JP 2002-367042	A	20021218

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 1431281	ICM	C07C309-67
	ICS	C08G061-10; C08G061-12; H01M010-40
EP 1431281	ECLA	C08G061/02; C08G061/10; C08L065/00; C08L065/02
JP 2004196947	FTERM	4H006/AA01; 4H006/AA03; 4H006/AB46; 4J032/CA03; 4J032/CB01; 4J032/CB03; 4J032/CE03; 4J032/CG01; 5H026/AA06; 5H026/BB10; 5H026/CX05; 5H026/EE18
US 2004126639	ECLA	C08G061/02; C08G061/10; C08L065/00; C08L065/02

OS MARPAT 141:54792

AB Described herein is a production method of sulfonated polyarylene that is safe and enables easy control of the amount and position of sulfonic groups introduced in the polymer. The sulfonated polyarylene is also disclosed. The invention further provides a polyarylene and an aromatic sulfonate derivative

that are suitably employed in the above production method. Also provided are a macromol. solid electrolyte that comprises the sulfonated polyarylene, and a proton conductive membrane. The aromatic sulfonate derivative has the formula $X_2C_6H_3YC_6H_4ASO_2R$, wherein X is a halogen atom other than fluorine, a $-OSO_3CH_3$ group or a $-OSO_3CF_3$ group; Y is a divalent organic group; A is $-(CH_2)_m-$ or $-(CF_2)_m-$ (wherein m is an integer of 1 to 10); and R is a C4-20 hydrocarbon group. The production method of sulfonated polyarylene comprises coupling polymerization of an aromatic compound that includes at

least the

aromatic sulfonate derivative and hydrolysis of the resultant polyarylene.

ST arom sulfonate polymer proton conductive membrane fuel cell

IT Sulfonic acids, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)

(arenesulfonic, salts; aromatic sulfonate derivative, polyarylene,

sulfonated

polyarylene and production method thereof, macromol. solid electrolyte, and proton conductive membrane)

IT Fuel cells

Hydrolysis

Polymer electrolytes

(aromatic sulfonate derivative, polyarylene, sulfonated polyarylene and

production

method thereof, macromol. solid electrolyte, and proton conductive membrane)

IT Polymerization

(coupling; aromatic sulfonate derivative, polyarylene, sulfonated

polyarylene

and production method thereof, macromol. solid electrolyte, and proton conductive membrane)

IT Polyketones

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyether-, fluorine-containing, oligomeric; aromatic sulfonate derivative, polyarylene, sulfonated polyarylene and production method thereof, macromol. solid electrolyte, and proton conductive membrane)

IT Fluoropolymers, preparation

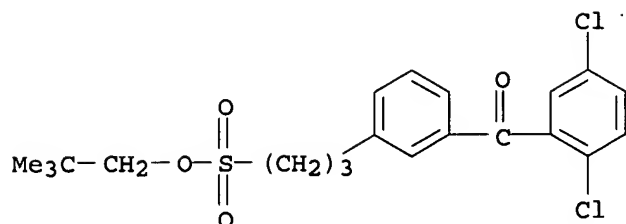
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(polyether-polyketone-, oligomeric; aromatic sulfonate derivative, polyarylene, sulfonated polyarylene and production method thereof,

macromol. solid electrolyte, and proton conductive membrane)
IT Polyethers, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(polyketone-, fluorine-containing, oligomeric; aromatic sulfonate
derivative,
polyarylene, sulfonated polyarylene and production method thereof,
macromol. solid electrolyte, and proton conductive membrane)
IT Membranes, nonbiological
(proton conductive; aromatic sulfonate derivative, polyarylene, sulfonated
polyarylene and production method thereof, macromol. solid electrolyte, and
proton conductive membrane)
IT Aromatic compounds
RL: IMF (Industrial manufacture); PREP (Preparation)
(sulfonates; aromatic sulfonate derivative, polyarylene, sulfonated
polyarylene and production method thereof, macromol. solid electrolyte, and
proton conductive membrane)
IT 705967-34-6P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(aromatic sulfonate derivative, polyarylene, sulfonated polyarylene and
production
method thereof, macromol. solid electrolyte, and proton conductive
membrane)
IT 705967-34-6DP, hydrolyzed
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(aromatic sulfonate derivative, polyarylene, sulfonated polyarylene and
production
method thereof, macromol. solid electrolyte, and proton conductive
membrane)
IT 69266-28-0P 122325-09-1P, Bisphenol AF-4,4'-dichlorobenzophenone
copolymer
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(oligomeric; aromatic sulfonate derivative, polyarylene, sulfonated
polyarylene and production method thereof, macromol. solid electrolyte, and
proton conductive membrane)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Jsr Corp; EP 1138712 A 2001 HCAPLUS
(2) Jsr Corp; EP 1245554 A 2002 HCAPLUS
(3) Jsr Corp; EP 1245555 A 2002 HCAPLUS
(4) Rikukawa, M; US 5403675 A 1995 HCAPLUS
IT 705967-34-6P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT
(Reactant or reagent)
(aromatic sulfonate derivative, polyarylene, sulfonated polyarylene and
production
method thereof, macromol. solid electrolyte, and proton conductive
membrane)
RN 705967-34-6 HCAPLUS
CN Benzenepropanesulfonic acid, 3-(2,5-dichlorobenzoyl)-, 2,2-dimethylpropyl
ester, polymer with bis(4-chlorophenyl)methanone and 4,4'-[2,2,2-trifluoro-
1-(trifluoromethyl)ethylidene]bis[phenol] (9CI) (CA INDEX NAME)

CM 1

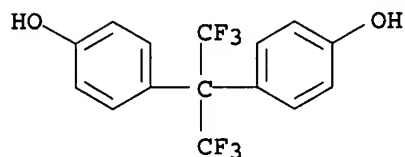
CRN 705967-33-5
CMF C21 H24 Cl2 O4 S



CM 2

CRN 1478-61-1

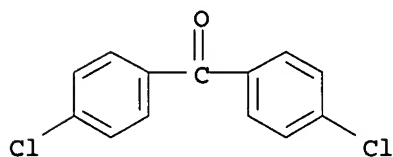
CMF C15 H10 F6 O2



CM 3

CRN 90-98-2

CMF C13 H8 Cl2 O



IT 705967-34-6DP, hydrolyzed

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(aromatic sulfonate derivative, polyarylene, sulfonated polyarylene and production method thereof, macromol. solid electrolyte, and proton conductive membrane)

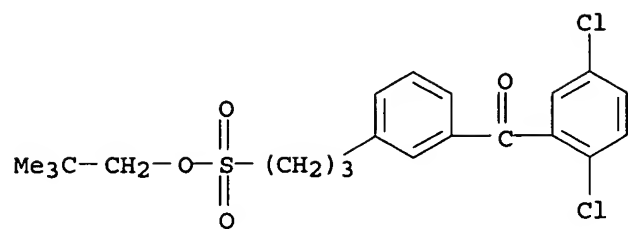
RN 705967-34-6 HCAPLUS

CN Benzenepropanesulfonic acid, 3-(2,5-dichlorobenzoyl)-, 2,2-dimethylpropyl ester, polymer with bis(4-chlorophenyl)methanone and 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethyldiene]bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 705967-33-5

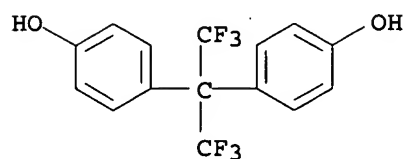
CMF C21 H24 Cl2 O4 S



CM 2

CRN 1478-61-1

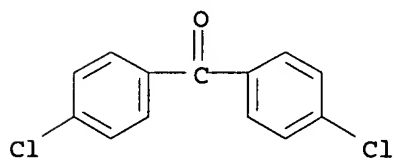
CMF C15 H10 F6 O2



CM 3

CRN 90-98-2

CMF C13 H8 Cl2 O



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